

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing Of Claims:

1.-13 (Canceled)

14. (New) A method for bidirectional single-wire data transmission of data information between a control unit and at least one peripheral unit, comprising:

performing at least one of:

generating a first current flow from the control unit to the peripheral unit during first time slots via a single-wire line to transmit one of voltage-coded information and current-coded information from the control unit to the peripheral unit, and

generating a second current flow from the peripheral unit to the control unit during second time slots via the single-wire line to transmit at least one of the voltage-coded information and the current-coded information from the peripheral unit to the control unit;

implementing the first time slots and the second time slots so they do not mutually overlap;

generating additional information to be at least one of transmitted and uploaded in at least one of the first time slots and the second time slots;

transmitting the additional information as one of digital signals and analog signals by modulating one of a current and a voltage of the single-wire line;

analyzing the additional information in one of the control unit and the peripheral unit.

15. (New) The method as recited in Claim 14, further comprising:

connecting the peripheral unit to its own power supply.

16. (New) The method as recited in Claim 14, further comprising:

activating the peripheral unit by the first current flow from the control unit to the peripheral unit.

17. (New) The method as recited in Claim 14, wherein:
the at least one of the transmission and uploading of the additional information occurs in real-time.
18. (New) The method as recited in Claim 14, wherein the additional information is implemented as a digital signal on a plurality of stages.
19. (New) The method as recited in Claim 14, wherein the additional information is implemented as a diagnostic signal for diagnosis of the peripheral unit.
20. (New) The method as recited in Claim 14, further comprising:
diagnosing a proper function of a single-wire interface.
21. (New) The method as recited in Claim 14, wherein the additional information is implemented as the basis for calculating a new control signal for controlling the peripheral unit.
22. (New) A device for bidirectional single-wire data transmission of data information between a control unit and at least one peripheral unit, comprising:
at least one of the following:
 - a first arrangement, provided in the control unit, for generating a first current flow for transmitting one of voltage-coded information and current-coded information from the control unit to the peripheral unit during first time slots via a single-wire line, and
 - a second arrangement, provided in the peripheral unit, for generating a second current flow for transmitting one of the voltage-coded information and the current-coded information from the peripheral unit to the control unit during second time slots via the single-wire line;
 - an arrangement for modulating one of a current and a voltage of the single-wire line in at least one of the first time slots and the second time slots for additional information to be at least one of transmitted and uploaded;
 - an arrangement for transmitting the additional as one of digital signals and analog signals; and
 - an arrangement, provided in one of the control unit and the peripheral unit, for detecting the additional information.

23. (New) The device as recited in Claim 22, wherein the control unit is implemented as an engine control unit.
24. (New) The device as recited in Claim 22, wherein the peripheral unit is implemented as a component having electronics.
25. (New) The device as recited in Claim 24, wherein the component includes one of an ignition coil and a fuel injector of a motor vehicle engine.
26. (New) The device as recited in Claim 24, wherein at least one of the first arrangement and the second arrangement include resistors and switches or current sources or voltage sources for an alteration in the voltage-coded or current-coded information.
27. (New) The device as recited in Claim 22, wherein:
the peripheral unit is powered during the first time slots by the first current flow from the control unit to the peripheral unit, thereby, in case of activation by the control unit, powering low-power electronics of the peripheral unit including a driver device and information-processing electronics, including at least one of a communication logic and an activation of power electronics.